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10/728,916	12/08/2003	Minehiro Tonosaki	246219US6	9663

  

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1940 DUKE STREET		
ALEXANDRIA, VA 22314		

  

EXAMINER	
LEO, LEONARD R	

  

ART UNIT	PAPER NUMBER
3744	

  

NOTIFICATION DATE	DELIVERY MODE
02/05/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

Application No.

10/728,916

Applicant(s)

TONOSAKI ET AL.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11, 12, 14-18, 20-22, 25-32, 34 and 36-54 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 12, 14-16, 25, 27, 29, 31, 32, 36, 38, 40, 44, 48, 49, 51 and 53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

Continuation of Disposition of Claims:

Claims withdrawn from consideration are 17,18,20-22,26,28,30,34,37,39,41-43,45-47,50,52 and 54.

### **DETAILED ACTION**

Claims 11-12, 14-18, 20-22, 25-32, 34 and 36-54 are pending, and claims 42-43 and 45-46 remain withdrawn from further consideration.

#### ***Election/Restrictions***

Claims 17-18, 20-22, 26, 28, 30, 34, 37, 39, 41, 47, 50, 52 and 54 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 21, 2007. Claim 53 was inadvertently included in the invention of Group II and will be examined with the elected invention.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11-12, 14-16, 25, 27, 29, 31-32, 36, 38, 40, 44, 48-49, 51 and 53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification lacks an adequate written description of the invention. There is no basis for “a first glass and a first substrate” and “a second glass and a second substrate” in claim 1. The specification discloses only a single glass substrate. There is no basis for “the first and second substrates are at least one of a *glass substrate* and a silicon substrate” in claim 1. The

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specification discloses the device is composed of only a glass and silicon substrate, not two glass substrates.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 51 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim depends on cancelled claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-12, 14-16, 25, 27, 29, 31-32, 36, 38, 40, 44, 48-49, 51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirshberg et al in view of Steele et al or Uchida et al.

Kirshberg et al discloses a heat-transport device comprising a refrigerant; a glass 22 and silicon substrate 21 defining an evaporator 10, a condenser 12, a liquid passage 16, a vapor passage 14, and a wick 24 in the evaporator (Figure 2), but does not disclose a silicon dioxide coating.

Steele et al or Uchida et al discloses a heat exchanger comprising a heat transfer surface and a hydrophilic coating of silicon dioxide or silicate for the purpose of improving wetting and wicking properties to improve heat transfer.

Since Kirshberg et al and Steele et al or Uchida et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Steele et al or Uchida et al would have been recognized in the pertinent art of Kirshberg et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kirshberg et al a hydrophilic coating of silicon dioxide or silicate for the purpose of improving wetting and wicking properties to improve heat transfer as recognized by Steele et al or Uchida et al. Further, it would have been obvious to one of ordinary skill in the art to apply a known technique to a known device ready for improvement to yield predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007).

The recitation of “formed by ... oxidation” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claim 12, the first and second glass is read as being the same material. Similarly, the first and second substrates are read as being the same material, i.e. silicon.

Regarding claims 14 and 29, Steele et al or Uchida et al discloses the silicon dioxide is a hydrophilic, i.e. an affinity for water (H<sub>2</sub>O). Furthermore, water is a well-known working fluid in heat pipes.

Regarding claims 15 and 31-32, the silicon dioxide coating as taught by Steele et al or Uchida et al would be disposed wherever enhanced wetting and wicking is required. In this instance, only the wick of Kirshberg et al on glass 22 would be coated to provide enhancement.

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Regarding claim 16, the recitation of “by anodic bonding” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claim 25, the recitation of “ion implanted” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claim 27, the wick 24 of Kirshberg et al are grooves.

Regarding claim 36, the recitation of “by chemical vapor deposition” is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance. See MPEP 2113.

Regarding claims 38 and 40, the similar coating of Steele et al or Uchida et al is believed to function in a manner similar to applicants. See also MPEP 2114.

Regarding claim 48, Kirshberg et al (abstract) discloses the device is a CPL.

Regarding claims 49 and 51, the specific dimensions of the condenser and wick grooves is considered to be an obvious design choice. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any desired dimensions, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further, it would have been obvious to one of ordinary skill in the art to try - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007).

***Response to Arguments***

The rejection of claim 33 under 35 U.S.C. 112, first paragraph, is withdrawn in view of the claim cancellation.

The rejection in view of Pomeranz is withdrawn in view of the withdrawn invention.

Applicant's arguments have been fully considered but they are not persuasive. Initially, it is noted the method claims have been withdrawn to a nonelected invention. The method limitations in the product claims bear no patentable weight in this instance. See MPEP 2113. Any remarks with respect to the method limitations are moot.

In response to applicant's argument that Steele et al or Uchida et al is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Steele et al or Uchida et al are drawn to heat transport devices. The size of the devices is of consequence, since the mechanisms or thermodynamics of the devices are fundamental, i.e. heat transfer surfaces coated with a hydrophilic silicon dioxide to improve heat transfer. The prior art couldn't be more pertinent and analogous art.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Thus, one of ordinary skill in



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the art would employ the teachings of Steele et al or Uchida et al to apply a hydrophilic coating of silicon dioxide or silicate for the purpose of improving wetting and wicking properties to improve heat transfer. A person having ordinary skill in the art would employ any known methods to form the silicon dioxide coating.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834834. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/ LEONARD R. LEO /  
PRIMARY EXAMINER  
ART UNIT 3744

January 29, 2008